

**Optoelectronic devices containing highly transparent non-metallic cathodes****Publication number:** TW476227 (B)**Publication date:** 2002-02-11**Inventor(s):** THOMPSON MARK E [US]; YOU YUJIAN [CN]; SHOUSTIKOV ANDREI [RU]; PETASIS NICOS A [CY]; SIBLEY SCOTT [US]**Applicant(s):** UNIV PRINCETON [US]; UNIV SOUTHERN CALIFORNIA [US]**Classification:**

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**Application number:** TW19980116739 19990426**Priority number(s):** US19970948130 19971009; US19970064005P 19971103; US19970964863 19971105; US19970980986 19971201; US19980054707 19980403**Abstract of TW 476227 (B)**

A novel class of low reflectivity, high transparency, non-metallic cathodes useful for a wide range of electrically active, transparent organic devices are disclosed. As a representative embodiment, the highly transparent non-metallic cathode of an OLED employs a thin film of copper phthalocyanine (CuPc) capped with a film of low-power, radio-frequency sputtered indium-tin-oxide (ITO). The CuPc prevents damage to the underlying organic layers during the ITO sputtering process. Due to the low reflectivity of the non-metallic cathode, a non-antireflection-coated, non-metallic-cathode-containing TOLED is disclosed that is 85% transmissive in the visible, emitting nearly identical amounts of light in the forward and back-scattered directions. The performance of the non-metallic-cathode-containing TOLED is found to be comparable to that of TOLEDs employing a more reflective and absorptive cathode consisting of a semi-transparent thin film of Mg:Ag capped with ITO. The present invention is further directed toward novel OLEDs in which the highly transparent non-metallic cathodes may be used in OLEDs comprised of a charge carrier layer containing a compound having molecules that have at least one electron transporting moiety and at least one hole transporting moiety, OLEDs comprised of an emissive layer containing an azlactone-related dopant, OLEDs comprised of an emissive layer containing a phosphorescent dopant compound, or OLEDs comprised of a hole transporting layer containing a glassy organic hole transporting material comprised of a compound having a symmetric molecular structure.

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